

## Streaming Airline Traffic with ADS-B: AEROPVS011

**Streaming Airline Traffic with ADS-B** is a specialized simulation capability featured in **vsTASKER Version 7**, a commercial C++ simulation framework developed by VirtualSim. This capability allows the software to ingest live, real-time aircraft data from global tracking networks and generate intelligent, moving entities inside a simulated synthetic environment.

The primary purpose is to let developers mix actual global air traffic seamlessly into Air Traffic Control (ATC) training, airspace analysis, and flight-plan validation scenarios.

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### Core Technical Capabilities

The software processes enormous quantities of live tracking data by utilizing a specialized architecture:

- **Online Stream Integration:** It connects directly to live ADS-B providers such as OpenSky Network and Aviation Edge to pull global or regional aircraft streams.
- **Dead Reckoning & Extrapolation:** Because external API streams typically push updates at intervals (such as every 30 seconds), vsTASKER uses internal physics models to extrapolate and smoothly calculate an aircraft's position between data points.
- **Stress-Tested Performance:** The software can execute high-volume simulations, demonstrating stable performance at **30 Hz** while actively tracking up to **12,000 aircraft** simultaneously.
- **Dynamic Visualization:** Tracked aircraft automatically project color-coded altitude trails. In standard demos, the software scales colors based on elevation: white above 10,000 meters, green below that milestone, and transitioning to a hot red as they drop under 500 meters.
- **Stat Collection:** While streaming, the engine dynamically tabulates running airspace metrics, including arrival/departure counts and total flown distances.

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## Use Cases in Simulation

By tying actual airspace variables into vsTASKER's broader C++ SDK, developers build highly complex scenarios:

| Use Case            | Implementation Details                                                                                                                                                                                                           |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ATC Training        | Instructors can introduce simulated training hazards (such as uncooperative drones or emergency aircraft) directly into a radar screen populated by actual, live local airline traffic.                                          |
| Bespoke HMI Layouts | Simulated environments map onto custom VirtualSim HMI interfaces using OpenGL-Glut, or link out to external C++ compatible builders like Qt, wxWidgets, or GL-Studio.                                                            |
| 3D Image Generation | By bridging the scenario data with standard OpenSceneGraph (OSG) viewers or Image Generators (via DIS/CIGI protocols), users can visually spectate an airport or sector from any 3D perspective with realistic terrain overlays. |

If you are looking to deploy this feature, would you like to know more about its **C++ API requirements**, or do you need assistance configuring **OpenSky Network data connections** for the software?

vsTASKER utilizes built-in components to import, process, and visualize real-time **ADS-B stream data** from online providers to populate large-scale Air Traffic Control (ATC) simulations. Developed by VirtualSim, the software can extrapolate flight positions between updates and run complex, high-density traffic analysis.

## Key Technical Capabilities

- **High Capacity Simulation:** The software can stress-test scenarios at **30 Hz** with up to **12,000 active aircraft** simultaneously.

- **Live Stream Integration:** It continuously ingests unfiltered real-time data from online providers like OpenSky Network and Aviation Edge.
- **Extrapolation Engine:** Because the incoming ADS-B data streams update approximately every 30 seconds, vsTASKER uses internal physics and flight dynamics to smoothly extrapolate aircraft positions between updates
- **Dynamic Visual Tracking:** The engine can dynamically change aircraft trail colors based on altitude thresholds (e.g., white above 10,000m, green below, and red under 500m).
- **Data Analysis:** During real-time simulation or 24-hour recordings, the system tracks specific metrics like overall flown distances and cumulative arrival/departure counts.

### Use Cases in Air Traffic Control

- **Mixed Traffic Environments:** Designers can inject live, real-world ADS-B traffic directly into training setups, mixing real aircraft with simulated local targets to train ATC operators.
- **Bespoke HMI Interfaces:** Developers can build standalone tactical displays and radar control panels using the native OpenGL-Glut HMI builder, or connect external C++ compatible HMI packages such as Qt, wxWidgets, Presagis VAPS, or GL-Studio.
- **Flight Plan Database Integration:** The tool supports building traffic structures based on standard ARINC 424 RNAV navigation databases.
- **3D Viewer Integration:** For enhanced realism, position coordinates (latitude, longitude, and spherical trigonometry) can be piped via DIS or CIGI protocols into 3D image generators like osgEarth or Unreal Engine.

If you are setting up a scenario, tell me:

- Do you want to **mix live feeds with scripted flight plans**?
- What **external HMI or 3D engine** (if any) are you using?
- What **geographic region** are you targeting?

I can provide specific implementation steps or connection configuration details for your project.

Version 7 comes with some handy components which can import real-time ADS-B stream from online providers, process the data and import aircraft onto the scenario, live.

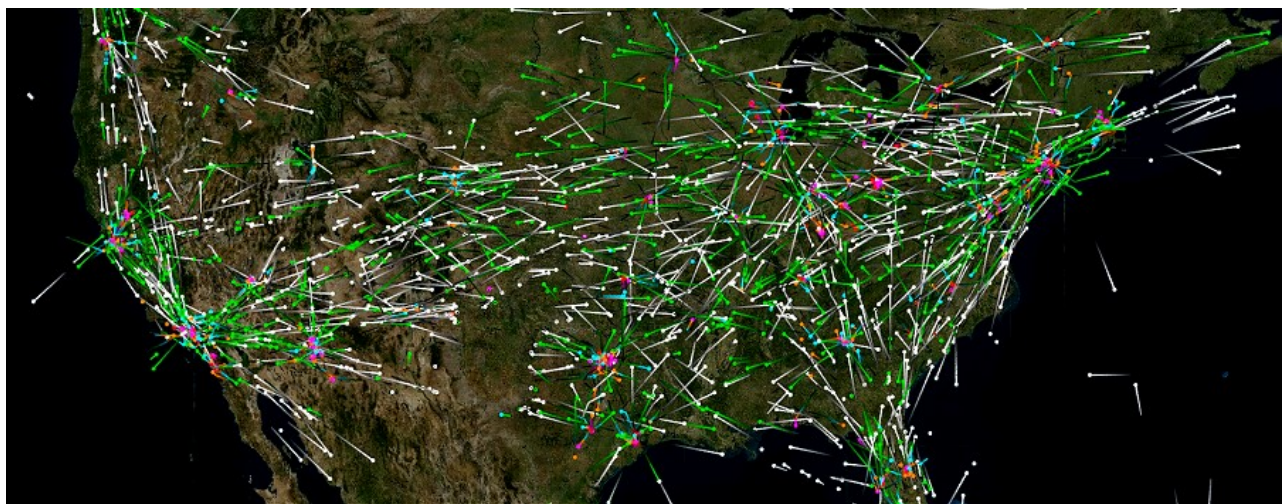
Each imported aircraft hold dynamics, so its position can be extrapolated between updates if needed.

On these time lapse videos, vsTASKER has processed in real time the traffic over large areas, during hours. The screen has been recorded every second, then the resulting movie has been accelerated 30 to 40 times. Simulation was running at 30 hz with up to 12000 aircraft. ADS-B stream was updating them every 30 seconds.

During the simulation run, number of departures and arrivals were counted as well as flown distances. Aircraft trail change color according to altitude. White above 10000m, green below, red under 500m. The hotter the color, the lower the aircraft.

Following videos show traffic in the World, Europe and New-York state. In this demo:

- ADS-B stream from OpenSky-Networks.org
- ADS-B stream from Aviation-Edge.com
- vsTASKER 7 with dedicated HMI
- Debut Video Capture
- Filmora 9 for the video edition



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